



Europäisches Patentamt  
European Patent Office  
Office européen des brevets

(11) Publication number:

0 370 656  
A1

(2)

## EUROPEAN PATENT APPLICATION

(21) Application number: 89311507.1

(51) Int. Cl.5: A61K 37/02, // (A61K37/02,  
31:52)

(22) Date of filing: 07.11.89

(30) Priority: 09.11.88 US 269276

(71) Applicant: SCHERING CORPORATION  
2000 Galloping Hill Road  
Kenilworth New Jersey 07033(US)

(43) Date of publication of application:  
30.05.90 Bulletin 90/22

(72) Inventor: Bonnem, Eric M.  
622 Belvidere Avenue  
Plainfield New Jersey 07062(US)

(84) Designated Contracting States:  
ES GR

(74) Representative: Ritter, Stephen David et al  
Mathys & Squire 10 Fleet Street  
London EC4Y 1AY(GB)

(54) Treatment of myelosuppression associated with acquired immune deficiency.

(57) Pharmaceutical compositions and methods of treatment are useful for treating myelosuppression and viral infections associated with AIDS, particularly cytomegalovirus retinitis. Such compositions and treatments utilize an antiviral effective amount of 9-(1,3-dihydroxy-2-propoxymethyl) guanine (DHPG) in combination with an anti-myelosuppressive effective amount of granulocyte macrophage colony stimulating factor (GM-CSF). The use of DHPG and of GM-CSF for the preparation of a pharmaceutical composition for use in this combination treatment as well as kits containing pharmaceutical compositions containing DHPG and GM-CSF are also disclosed.

EP 0 370 656 A1

1. A pharmaceutical composition comprising an antiviral effective amount of DHPG in combination with an anti-myelosuppressive effective amount of GM-CSF.
2. The pharmaceutical composition as claimed in claim 1 wherein the antiviral effective amount of DHPG is an amount sufficient to lessen the symptoms associated with cytomegalovirus retinitis.
3. The pharmaceutical composition as claimed in claims 1 or 2 wherein the anti-myelosuppressive effective amount of GM-CSF is an amount sufficient to raise the white blood count to at least about 2000 per cm.
4. The pharmaceutical composition as claimed in anyone of claims 1 to 3 wherein the anti-myelosuppressive effective amount of GM-CSF is an amount sufficient to raise the white blood cell count to from about 2000 to about 10,000 per cm.
5. The pharmaceutical composition as claimed in anyone of claims 1 to 4 wherein the anti-myelosuppressive effective amount of GM-CSF is from about 3 to about 15 mu g per Kg per day.
6. The pharmaceutical composition as claimed in anyone of claims 1 to 5 further comprising an appropriate solution for intravenous infusion.
7. A method of treating a patient suffering from myelosuppression and a viral infection associated with AIDS comprising administering to such a patient an antiviral effective amount of DHPG and an anti-myelosuppression effective amount of GM-CSF.
8. A method of treating a patient as claimed in claim 7 wherein a pharmaceutical composition of anyone of claims 1 to 6 is administered to the patient.
9. The method of claim 7 wherein administration of the DHPG is intravenous and GM-CSF is subcutaneous.
10. The method of claim 7 wherein administration of the DHPG is intravenous and GM-CSF is intravenous.
11. A method of treating a patient suffering from myelosuppression and cytomegalovirus retinitis associated with AIDS comprising administering to such a patient an antiviral effective amount of DHPG and an anti-suppressive effective amount of GM-CSF.
12. The use of DHPG for the preparation of a pharmaceutical composition for use in a combined therapy for treating a patient suffering from myelosuppression and a viral infection by administering DHPG in association with GM-CSF.
13. The use of GM-CSF for the preparation of a pharmaceutical composition for use in a

combined therapy for treating a patient suffering from myelosuppression and a viral infection by administering GM-CSF in association with DHPG.

14. The use of DHPG in association with GM-CSF for the preparation of a pharmaceutical composition for treating a patient suffering from myelosuppression in association with a viral infection, said pharmaceutical composition comprising DHPG and GM-CSF together with pharmaceutically acceptable carriers therefor.

15. The use of DHPG in combination GM-CSF for treating a patient suffering from myelosuppression and a viral infection.

16. A process for the preparation of a pharmaceutical composition as claimed in anyone of claims 1 to 6 with comprises admixing DHPG and GM-CSF with pharmaceutically acceptable carriers therefor.

17. A kit for use in treating patients suffering from myelosuppression and a viral infection, said kit comprising a pharmaceutical package having a first container and a second container, wherein the first container comprises a pharmaceutical composition containing an antiviral effective amount of DHPG and the second container comprises a pharmaceutical composition containing anti-myelosuppressive amount of GM-CSF.